

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

VOL. XCVIII. — THURSDAY, FEBRUARY 28, 1878. — NO. 9.

LITHOTRITY BY A SINGLE OPERATION.¹

BY HENRY J. BIGELOW, M. D.,

Professor of Surgery in Harvard University; Surgeon of the Massachusetts General Hospital.

WHEN Sydney Smith asked, "What human plan, device, or invention two hundred and seventy years old does not require reconsideration?" he would no doubt have regarded with favor an occasional reconsideration of the theory and practice of medicine and surgery, — especially in view of the current belief that their traditions have been kept alive and their rules prescribed in part by authority. The surgical literature of lithotomy, both French and English, so long showed the influence of the early specialists that we have hardly now escaped from its exaggerated circumstance and detail. And yet, with attention to a few precise rules, the operation of lithotomy is quite a simple one, — much less difficult, for example, than the dissection of tumors. It is not impossible that convictions in some degree traditionary may prevail in regard to certain points connected with the practice of the more recent art of lithotrity.

Civiale was among the first to inculcate the excessive susceptibility of the bladder under instruments. Later surgeons, perhaps influenced in part by his teaching, have continued to invest the operation of lithotrity with precautions which, though by no means groundless, because under certain conditions both the bladder and the urethra are actively resentful of even slight interference, are nevertheless greater than this operation generally requires. As a rule, there is little difficulty in it. The stone is readily caught and broken into fragments, of which a few are pulverized; a large-eyed catheter is then sometimes introduced; a little sand and a few bits of stone are washed out; after which the patient is kept quiet to discharge the remainder, and await another "sitting." Under favorable circumstances, such an operation, lasting a few minutes, is not only simple, but safe. Yet the fact that it is not always so could not fail to arrest the attention of surgeons. It may happen that during the succeeding night the patient has a chill; not the chill of so-called "urethral fever," which sometimes follows

¹ From the American Journal of the Medical Sciences, Philadelphia, January, 1878. With additions.

the mere passage of a bougie, and which is of little consequence, but one accompanied or followed by other symptoms, such as tenderness in the region of the bladder, a quickened pulse, and the frequent and painful passage of urine. These symptoms may insidiously persist rather than abate. Others may supervene. The surgeon vainly waits for a favorable moment to repeat his operation; it becomes too evident that the patient is seriously ill, and it is quite within the range of possibilities that in the course of days or weeks he may quietly succumb. An autopsy discloses a variety of lesions, — some of them remote or obscure, others of more obvious origin, — and among these, not the least common, an inflamed bladder, upon the floor of which angular fragments and chips of stone are resting. It is then evident that during a certain interval before death the bladder was not in condition for further instrumental interference; and although, in view of the fatal result of delay, lithotomy or active lithotrity, to both of which in cases like this I have resorted, might have been on the whole the least of evils, it is plain that either operation would have furnished in itself an additional cause of serious inflammation.

Such a result might be supposed to point to the necessity of extreme precaution; and it will be justly urged that the purpose of such interference at an unfavorable moment is the removal of the offending fragments as a last resource. But if at the first operation the bladder could have been completely disembarassed of every particle of stone, even with the risk of irritating its lining membrane, we can hardly doubt that the relief would then have been followed by ready repair. In short, it is difficult to avoid the conviction that in an average case damage to the mucous membrane, and quite as great, is as likely to follow the persistent irritation by angular fragments as the protracted use of instruments for the entire removal of a stone, if this result can be accomplished.

It is probable that the injury from the use of instruments has been in some measure confounded with that resulting from the presence of fragments in the bladder. That the average bladder and urethra have no extreme susceptibility is attested by the generally favorable results of lithotrity, and even of catheterism, which are practiced with very varying skill everywhere; also by the singularly innocuous results of laceration of the contracted urethra, by an instrument like that of Voilemier, for example; so, too, by their recovery from the considerable injury inflicted during the extraction of a large and rough stone in lithotomy. The bladder is often also tolerant to an extraordinary degree of the presence even of a mulberry calculus. If we remember that in this case it clasps the stone at every micturition, often with a persistent gripe, the comparative immunity of its tender mucous membrane is quite remarkable. But when sharp fragments are thus embraced, pre-

senting fresh and acute angles, which do not soon become blunted, and to which the bladder is unaccustomed, it is more remarkable that serious consequences are the exception and not the rule in lithotrity. Polished metallic surfaces carefully manipulated can hardly do such damage as the agencies here enumerated.

Gentleness, dexterity, and experience are especially to be valued in lithotrity. It has been well said that no novice should undertake this operation. But the habit of confounding the symptoms resulting from the presence of fragments with those following the use of instruments originally led to precautions in the introduction and manipulation of the latter which were sometimes excessive. Civiale, with an almost unparalleled experience, introduced a small lithotrite with much less pressure than its own weight, and with uniform and great slowness. And yet, in a healthy urethra, it is only at the triangular ligament and beyond it that such extreme care is called for. Civiale, who had no means of evacuating fragments in the bladder, restricted the length of his operation to two or three, or perhaps five minutes. The same solicitude seems to have led Sir Henry Thompson, in his admirable and standard work upon this subject, to assign two minutes as the proper average duration of a sitting, — a period which his exceptional skill has often in his own practice enabled him materially to reduce. I have been gratified to find, however, that since he has availed himself of the advantage of etherization he recognizes the benefit to be derived from somewhat more prolonged manipulation. My own conviction is that it is better to protract the operation indefinitely in point of time, if thus the whole stone can be removed without serious injury to the bladder. I believe that in any case which is as favorable to lithotrity as the average, in these days when stones are detected early, this can be effected; and that if the bladder be completely emptied of detritus, we have as little to apprehend from the fatigue of the organ consequent upon such manipulation as from the alternative of residual fragments and further operations. The duration of the sittings in the cases reported at the end of this paper varied from three quarters of an hour to three hours and three quarters. The bladder can be thus completely and at once evacuated, in a majority of cases. The stone, after crushing, can be removed through the urethra by a tube contrived for the purpose.

But has not this result already been attained by evacuating instruments variously devised and modified? The following quotations from the latest authorities sufficiently answer this question in the negative: —

“We may here say, without fear of being accused of exaggeration, that evacuating injections practiced after sittings of lithotrity have no apology for their use. *The whole surgical arsenal invented for their performance is absolutely useless. . . . It should be well understood that the best of the evacuating catheters is worthless.*” (Article Lithot-

ritie, by Demarquay et Cousin, in the *Nouveau Dictionnaire de Médecine et de Chirurgie pratique*. Paris, 1875. Pages 693, 694.)

"*The practice of injecting the bladder to wash out detritus is obsolete. . . . This apparatus of Mr. Clover should not be employed, if it be possible to dispense with it, as its use is quite as irritating as lithotripsy itself.*" (S. D. Gross, *Diseases, etc., of the Urinary Organs*. Philadelphia, 1876. Page 232.)

"Having used it very frequently [Clover's apparatus], I would add that it is necessary to use all such apparatus with extreme gentleness, and *I prefer to do without it, if possible.*" (Sir H. Thompson, *Practical Lithotripsy and Lithotomy*. 1871. Page 215.)

"*All these evacuating catheters are little employed. They require frequent and long manœuvres which are not exempt from dangers; besides, they give passage, as a rule, only to dust, or to little fragments of stone, which would have escaped of themselves without inconvenience to the urethra.*" (Article *Lithotritie*, by M. Voillemier, *Dictionnaire encyclopédique des Sciences médicales*. 1869. Page 733.)

In short, the "evacuating apparatus" hitherto employed does not evacuate.

It is not a recent contrivance. From the earlier days of lithotripsy, the operation of breaking the stone has been followed by the obvious expedient of introducing a large and special catheter, through which water was injected and allowed to escape, bringing away a little sand, with a small fragment or two. This attempt at evacuation was aided by suction. With this object, and before the year 1846, Sir Philip Crampton employed an exhausted glass globe. For the same purpose a syringe has been used, or a rubber enema or hydrocele bottle, with which fluid could be also injected and the bladder washed. By entering the catheter well within the bottle or syringe, fragments were dropped inside the neck, where, lying below the current, they remained when the bottle was again compressed. When this neck was made of glass, by Clover, the fragments became visible, as in Crampton's globe, and to this neat arrangement the accomplished lithotritist, Sir Henry Thompson, refers as Clover's bottle. But neither the previous practice nor the efficiency of evacuation by suction through a tube had been materially advanced. In the mean time the syringe was modified in France by a rack and pinion attached to the piston, so that water could be injected and withdrawn with great force, a procedure not only useless but detrimental to the bladder if it be inflamed and thickened.

Before describing my own instruments it may be well to say a word in regard to the introduction of instruments, especially large ones, into the bladder, — an important subject in this connection.

A syringe facilitates an abundant use of oil in the urethra or within

a tube. Into the normal urethra a straight instrument can be introduced with at least as much accuracy as a curved one. Either may be passed rapidly as far as the triangular ligament, unless the instrument is very large, in which case great care is required not to rupture the mucous membrane. Having reached this point, which implies that there should have been no premature endeavor to turn the instrument, but that it should be passed as far as it will go in the general direction of the anus, the extremity of the instrument depresses the floor of the urethra in front of the ligament. Traction upon the penis next effaces this depression, and adds firmness to the urethral walls; so that if the instrument be withdrawn a little, and at the same time guided by the bony arch above, it can be coaxed without difficulty through the ligament in question,—a natural obstruction which physicians often mistake for a stricture. This obstruction passed, the rest of the canal is short, and corresponds to the axis of the body, to the line of which the instrument is now depressed. Even the enlarged prostate can often be traversed advantageously by a straight instrument. In fact, a prostatic catheter, as is well known, consists essentially of an inch or two of straighter tube added to the extremity of a common catheter, to reach through the unyielding prostate before the hand is depressed and the beak turned up. In passing either a sound, catheter, or lithotrite, the extremity of a straight instrument, and, curiously enough, the convexity of a curved one, is sometimes arrested just at the entrance of the bladder by the firm lower edge of the inner meatus. The fact that water now passes through the inner meatus, thus dilated, or that a stone is felt with the tip of the curved instrument, which has really entered the bladder, may lead the operator into the mistake of supposing that the instrument is fairly in it; and I have known its further entrance, after sliding over this obstacle, to be erroneously explained by assuming the existence of a second or hour-glass cavity in the bladder itself. To obviate this difficulty, and so soon as the triangular ligament is passed, the catheter, if curved, should be pressed through the indurated neck or prostate, in the direction of the axis of the body, by the hand on the perinæum,—a most efficient manœuvre when the prostate is large. If there be doubt the tip should of course be sought and guided in the rectum. After introduction a straight tube or the shaft of a curved one often returns to an angle of about 45° with the recumbent body, and, if the patient is not etherized, a feeling of tension may then be relieved by depressing, with the hand upon the pubes, the suspensory ligament of the penis,—an expedient also useful during the passage of the instrument.

My own practice has always been to etherize for lithotripsy.

Each operator prefers the position to which he is accustomed, and when the urethra is healthy this is of very little importance. But if

there be stricture or prostatic obstruction a position at the patient's left side enables the operator to hold and direct the instrument to advantage with the right hand, leaving the left hand free to act in the perinæum. After the instrument is introduced, and both hands are required above the pubes, they are most available if the surgeon changes his position and stands upon the patient's right.

It is important by a preliminary injection to ascertain carefully the capacity of the bladder by emptying it and then refilling it slowly with warm water, previously measured, until the water is expelled through the loosely held urethra by the side of the tube. In this way we prevent its over-distention. In the etherized subject a short pipe or nozzle suffices for this purpose. I have for many years employed a common Davidson's syringe. An unetherized patient may for a moment resist this injection through a short tube by contracting the sphincter of the bladder, but this readily yields. Except in a large bladder a distention by eight or ten ounces suffices for breaking the stone. The smaller the injection the more readily, indeed, do fragments fall into the blades of the instrument. But, unfortunately, so also does the mucous membrane. In fact, with too little fluid in the bladder the use of a lithotrite in unpracticed hands is attended with danger; and in a long sitting an injection which will render the walls moderately tense is the only really safe way of keeping the bladder from between the blades. After careful examination of the action of a lithotrite through an opening in the summit of the bladder, I have returned to this opinion which was held by the older writers on this subject. From time to time the diameter of the collapsing bladder should be estimated by carefully opening the blades of the lithotrite, and water should be introduced when necessary; but care should be taken not to injure a contracted bladder by first distending it, and afterwards adding to it the contents of the syringe or aspirating bottle.

A tape or an elastic band wound lightly once or twice around the penis retards the escape of injected water, and yet allows the movements of the tube or lithotrite.

In order to ascertain the maximum calibre of the urethra before introducing a tube, it should be measured by an instrument which will enter more readily than the tube. Such instruments we have in Van Buren's sounds, which are slightly curved at the end, and a little conical. Being made of solid metal, and nickel-plated, they traverse the urethra with singular facility. Otis's sounds also answer admirably for this purpose.

EVACUATING INSTRUMENT. (Figure 1.)—The following points are worthy of consideration in connection with any evacuating apparatus. The ten-ounce elastic bulb or bottle supplied with the usual instrument is inadequate to the exhaustion for which it is designed. It will barely sus-

tain, without collapse, a vertical column of water of the length of a catheter. A thick flask fatigues the hand of the operator. The bulb is also an awkward weight on the top of the catheter. These difficulties are obviated by interposing between the catheter and bulb a piece of rubber tube, varying in length as the surgeon may prefer, from six inches to two feet, to relieve the bladder from the force of any movement of the apparatus, and, what is more important, to allow the operator to hold the bulb on a level with the water in the bladder, or considerably below it. The exhaust then acts as a siphon, and readily

draws off the water. The fragments gravitate to the bottom of the bulb, and are there collected in a glass chamber. (See Figure 1, 3, 4.) To prevent the possible return to the bladder of some single fragment while on its way to this receptacle, the rubber tube, if long, may be provided with a small

glass trap containing a wire-gauze or perforated tube, to deliver the current and strain it on its return, but with a short rubber tube (Figures 3, 4), which is more convenient; this is not essential. One or two smaller bulbs might be provided for a contracted bladder.

The successful evacuation of the bladder depends upon several conditions, both in the apparatus and its use, which, for distinctness, may be enumerated separately.

(1.) *A large calibre of the evacuating tube.*

(2.) *Its shape.*

(3.) *The shape of its receiving extremity.*

(4.) *The manipulation of the bulb.*

(5.) *The evacuation of the fragments.*

(6.) *The immediate recognition and removal of any obstruction in the tube.*

(1.) *A large calibre of the evacuating tube.* Whether or not we adopt the view of Otis, that the average capacity of

(FIG. 1.) Evacuating Apparatus.
a. Elastic bulb and glass receptacle with brass cap, for débris. b. Rubber tube two feet in length. c. Evacuating tube of silver.
The efficiency of the process of evacuation depends much upon using the largest tube the urethra will admit. This fact has been stated by Sir Henry Thompson. But he recommends for the glass cylinder or trap which is to admit this tube a "perforation at the end, the size of a No. 14 catheter," = 25 Charrière.¹ This perforation

¹ Diseases of the Prostate, 4th edition, 1873, page 337.

is too small; and the tube which is designed to enter it is further reduced by its collar to the diameter of only 12, = 21 Charrière. In fact, this is the calibre of the evacuating catheters now attached to Clover's instrument, and is of itself fatal to their efficiency. An effective tube has a calibre of 28 to 31 or even 32 Charrière, and the meatus, which is the narrowest part, may, if necessary, be slit to admit it, if the urethra is otherwise capacious. Again, in the instrument, as sometimes constructed by Weiss, a joint is made by inserting an upper tube into a lower one, thus obstructing the calibre by a shoulder. The joints should become larger as the tube approaches the bottle, and the tube then delivers without difficulty fragments of its own calibre. Whatever be the size of the evacuating tube, the rubber tube, with its metal attachments, should have a calibre of at least seven sixteenths of an inch, = 31 Charrière.

My evacuating tubes are of thin silver, of sizes 27, 28, 29, 30, and 31, *filière Charrière*, respectively.

(2.) *Shape of the tube.* Works upon lithotrity enumerate and figure a variety of tubes through which fragments are to be aspirated. Many of these are useless. The best tube is either straight, or curved quite near the extremity; the latter to be used with the curve inverted and directed downward, the orifice then looking forward. (Figure 2.)

(3.) *Shape of the receiving extremity.* The receiving extremity should depress the bladder when required to do so, and thus invite the fragments, while its orifice remains unobstructed by the mucous membrane. Upon the floor of the bladder when not indented, a fragment of stone, lying at the distance of half or even quarter of an inch from the tube extremity, may not be attracted by the usual exhaust of the expanding bottle, which requires that the fragment should lie almost in contact with the tube. A very slight obstacle also impedes its entrance; and this fact renders inefficient all tubes like catheters, with orifices along the side or upper wall. Chips will not surmount their edge. Again, the orifice of a tube cut square is at once occluded by drawing in the vesical wall, while the spoon-shaped beak of the French instrument, made like the female blade of a lithotrite, allows fragments to lie too far from the opening in the tube. The best orifice is at the side of the extremity, and is made by bending the tube at a sharp right angle, carefully rounding the elbow, and then cutting off the bent branch close to the straight tube. (Figure 2 a.) The tube is then practically straight, while the orifice, which is slightly oval, delivers its stream laterally. The edge should be thickened and rounded to slide smoothly through the urethra, any rim inside the orifice should be masked by a false floor, but the calibre should be nowhere contracted. If the side walls of this orifice be removed a little, it gives an unguiform extremity to the tube, which is advantageous; and in introducing such a straight tube this tip

may be insinuated through the triangular ligament by rotation. If a couple of inches of the end of such a tube be bent, it may be inverted after introduction, and will bury itself in the floor of the bladder, which it depresses, while the orifice looks forward and is unobstructed. (Figure 2 b.) This form is very efficient, although I prefer the straight tube as safer and more easily directed when in the bladder, less liable to lodge fragments, and more readily cleared by a rod. An effective instrument may also be made of a tube cut square at the end, if a disk convex outwardly, to repel the bladder, be attached to it, at the distance of a diameter, by a bit of stiff metal. This was the original of the straight tube already described. When such an instrument is introduced the interval can be filled by a rod. In fact, the orifice of a tube should be contrived with a view to its introduction. The French tube already spoken of, shaped like the female blade of a lithotrite, would be efficient, if it were made large enough,—as it is not,—and provided also it were kept standing upon its heel in the bladder, with the shoe bent to make a precipitously inclined plane for the fragments. It would then offer a prolongation of the unguiform tip; but thus sharply bent, it would be less easy to introduce. Whatever be added to the extremity of the tube, in order to facilitate its introduction or to repel the bladder, should not prevent the orifice from lying, if required, in the floor of the bladder at the apex of a steep inverted tunnel.



(FIG. 2.) Evacuating tubes, with unguiform extremity. a. Straight tube. b. Curved tube. The dotted lines show the false floor of the extremity. The tubes are here of a diameter 31 Charrière.

(4.) *The manipulation of the bulb.* When the capacities of the bladder and urethra have been ascertained, the evacuating tube is introduced and the bladder completely emptied. A few ounces of water are next injected, that the fragments may be still floated after aspiration, and the apparatus, previously filled with water, is attached to the silver tube. To fill the bulb and at the same time expel the air, it should be held upright and several times compressed while the curved elastic is immersed in water. The latter is then carefully kept uppermost until attached to the evacuating tube. Air in the bladder is a disadvantage in distending it without floating the fragments. The

lege, which was created for Dr. Peaslee, will probably be abolished, and its duties be performed by Dr. Lusk, professor of obstetrics.

The commissioners of charities and correction have just completed a maternity hospital on Blackwell's Island. They have placed it about half a mile from Charity Hospital. It consists of two distinct wooden pavilions, one story high, containing two wards each, with twelve beds in a ward, separated by a narrow passage-way with rooms on either side. It was built on a plan proposed by the author of the Boylston Prize Essay on Hospitals, and is about as inconvenient for the attendants as it could be made. The wards are large, airy, and well lighted, ventilated by transoms over each window, and heated by large stoves in the ward. Between the two wards is a small dining-room poorly supplied with water, a pantry, and nurses' room. The kitchen is in the basement of one of the buildings, and is wholly inadequate for the purpose. I understand that the buildings were all ready for occupation when it was discovered that no provision had been made for cooking. A maternity hospital should be provided in the city, as it is, at times, almost impossible to reach the Island in bad weather, and even in pleasant weather it takes considerable time to get to the hospital. Maternity wards in general hospitals have been found to become, sooner or later, infected with puerperal fever, and have had to be moved. Whether it will be possible to prevent its development in the present hospital remains to be seen. It would seem that smaller and more isolated wards would have diminished the danger from that source. I believe that the plan of the building does not meet the views of the attending staff, but this is a secondary consideration in the eyes of the commissioners, who always carry out their own ideas without consulting the attending physicians.

Every two years there usually occurs a vacancy in the quarantine department from the retirement of the medical officer, and as often there is a great scramble for the place. It is the most lucrative position in the gift of the governor of the State. It is said to be worth sixty thousand dollars a year from legitimate fees, and there are plenty of men who are perfectly willing to sacrifice their private practice in order to serve the State on the above terms. At times the position has been abused, and exorbitant fees demanded and received, not to say anything about vessels which have been allowed for a consideration to come up to the city with contagious disease on board. The present incumbent has held the position for four years, and has never had a word said against the manner in which he has fulfilled his duties. He now wishes to resume his private practice, but the governor who nominates and the senate who confirm the nomination do not seem to be of the same mind on this question. Dr. Austin Flint, Jr., has been nominated three times for the position of health officer, and each time he has either been rejected or his name has been withdrawn, the trouble being that the executive is democratic and the senate republican in politics. There is no question as to the ability of the gentleman to fill the position. I suppose that the present incumbent will hold over until the governor and the senate can agree. In the mean time the city does not suffer.

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

VOL. XCVIII. — THURSDAY, FEBRUARY 28, 1878. — NO. 9.

LITHOTRITY BY A SINGLE OPERATION.¹

BY HENRY J. BIGELOW, M. D.,

Professor of Surgery in Harvard University; Surgeon of the Massachusetts General Hospital.

WHEN Sydney Smith asked, "What human plan, device, or invention two hundred and seventy years old does not require reconsideration?" he would no doubt have regarded with favor an occasional reconsideration of the theory and practice of medicine and surgery, — especially in view of the current belief that their traditions have been kept alive and their rules prescribed in part by authority. The surgical literature of lithotomy, both French and English, so long showed the influence of the early specialists that we have hardly now escaped from its exaggerated circumstance and detail. And yet, with attention to a few precise rules, the operation of lithotomy is quite a simple one, — much less difficult, for example, than the dissection of tumors. It is not impossible that convictions in some degree traditionary may prevail in regard to certain points connected with the practice of the more recent art of lithotrity.

Civiale was among the first to inculcate the excessive susceptibility of the bladder under instruments. Later surgeons, perhaps influenced in part by his teaching, have continued to invest the operation of lithotrity with precautions which, though by no means groundless, because under certain conditions both the bladder and the urethra are actively resentful of even slight interference, are nevertheless greater than this operation generally requires. As a rule, there is little difficulty in it. The stone is readily caught and broken into fragments, of which a few are pulverized; a large-eyed catheter is then sometimes introduced; a little sand and a few bits of stone are washed out; after which the patient is kept quiet to discharge the remainder, and await another "sitting." Under favorable circumstances, such an operation, lasting a few minutes, is not only simple, but safe. Yet the fact that it is not always so could not fail to arrest the attention of surgeons. It may happen that during the succeeding night the patient has a chill; not the chill of so-called "urethral fever," which sometimes follows

¹ From the *American Journal of the Medical Sciences*, Philadelphia, January, 1878. With additions.

the mere passage of a bougie, and which is of little consequence, but one accompanied or followed by other symptoms, such as tenderness in the region of the bladder, a quickened pulse, and the frequent and painful passage of urine. These symptoms may insidiously persist rather than abate. Others may supervene. The surgeon vainly waits for a favorable moment to repeat his operation; it becomes too evident that the patient is seriously ill, and it is quite within the range of possibilities that in the course of days or weeks he may quietly succumb. An autopsy discloses a variety of lesions, — some of them remote or obscure, others of more obvious origin, — and among these, not the least common, an inflamed bladder, upon the floor of which angular fragments and chips of stone are resting. It is then evident that during a certain interval before death the bladder was not in condition for further instrumental interference; and although, in view of the fatal result of delay, lithotomy or active lithotrity, to both of which in cases like this I have resorted, might have been on the whole the least of evils, it is plain that either operation would have furnished in itself an additional cause of serious inflammation.

Such a result might be supposed to point to the necessity of extreme precaution; and it will be justly urged that the purpose of such interference at an unfavorable moment is the removal of the offending fragments as a last resource. But if at the first operation the bladder could have been completely disembarassed of every particle of stone, even with the risk of irritating its lining membrane, we can hardly doubt that the relief would then have been followed by ready repair. In short, it is difficult to avoid the conviction that in an average case damage to the mucous membrane, and quite as great, is as likely to follow the persistent irritation by angular fragments as the protracted use of instruments for the entire removal of a stone, if this result can be accomplished.

It is probable that the injury from the use of instruments has been in some measure confounded with that resulting from the presence of fragments in the bladder. That the average bladder and urethra have no extreme susceptibility is attested by the generally favorable results of lithotrity, and even of catheterism, which are practiced with very varying skill everywhere; also by the singularly innocuous results of laceration of the contracted urethra, by an instrument like that of Voillemier, for example; so, too, by their recovery from the considerable injury inflicted during the extraction of a large and rough stone in lithotomy. The bladder is often also tolerant to an extraordinary degree of the presence even of a mulberry calculus. If we remember that in this case it clasps the stone at every micturition, often with a persistent gripe, the comparative immunity of its tender mucous membrane is quite remarkable. But when sharp fragments are thus embraced, pre-

senting fresh and acute angles, which do not soon become blunted, and to which the bladder is unaccustomed, it is more remarkable that serious consequences are the exception and not the rule in lithotrity. Polished metallic surfaces carefully manipulated can hardly do such damage as the agencies here enumerated.

Gentleness, dexterity, and experience are especially to be valued in lithotrity. It has been well said that no novice should undertake this operation. But the habit of confounding the symptoms resulting from the presence of fragments with those following the use of instruments originally led to precautions in the introduction and manipulation of the latter which were sometimes excessive. Civiale, with an almost unparalleled experience, introduced a small lithotrite with much less pressure than its own weight, and with uniform and great slowness. And yet, in a healthy urethra, it is only at the triangular ligament and beyond it that such extreme care is called for. Civiale, who had no means of evacuating fragments in the bladder, restricted the length of his operation to two or three, or perhaps five minutes. The same solicitude seems to have led Sir Henry Thompson, in his admirable and standard work upon this subject, to assign two minutes as the proper average duration of a sitting, — a period which his exceptional skill has often in his own practice enabled him materially to reduce. I have been gratified to find, however, that since he has availed himself of the advantage of etherization he recognizes the benefit to be derived from somewhat more prolonged manipulation. My own conviction is that it is better to protract the operation indefinitely in point of time, if thus the whole stone can be removed without serious injury to the bladder. I believe that in any case which is as favorable to lithotrity as the average, in these days when stones are detected early, this can be effected; and that if the bladder be completely emptied of detritus, we have as little to apprehend from the fatigue of the organ consequent upon such manipulation as from the alternative of residual fragments and further operations. The duration of the sittings in the cases reported at the end of this paper varied from three quarters of an hour to three hours and three quarters. The bladder can be thus completely and at once evacuated, in a majority of cases. The stone, after crushing, can be removed through the urethra by a tube contrived for the purpose.

But has not this result already been attained by evacuating instruments variously devised and modified? The following quotations from the latest authorities sufficiently answer this question in the negative:—

“We may here say, without fear of being accused of exaggeration, that evacuating injections practiced after sittings of lithotrity have no apology for their use. *The whole surgical arsenal invented for their performance is absolutely useless. . . . It should be well understood that the best of the evacuating catheters is worthless.*” (Article Lithot-

ritie, by Demarquay et Cousin, in the *Nouveau Dictionnaire de Médecine et de Chirurgie pratique*. Paris, 1875. Pages 693, 694.)

"*The practice of injecting the bladder to wash out detritus is obsolete. . . . This apparatus of Mr. Clover should not be employed, if it be possible to dispense with it, as its use is quite as irritating as lithotripsy itself.*" (S. D. Gross, *Diseases, etc., of the Urinary Organs*. Philadelphia, 1876. Page 232.)

"Having used it very frequently [Clover's apparatus], I would add that it is necessary to use all such apparatus with extreme gentleness, and *I prefer to do without it, if possible.*" (Sir H. Thompson, *Practical Lithotripsy and Lithotomy*. 1871. Page 215.)

"*All these evacuating catheters are little employed. They require frequent and long manœuvres which are not exempt from dangers; besides, they give passage, as a rule, only to dust, or to little fragments of stone, which would have escaped of themselves without inconvenience to the urethra.*" (Article *Lithotritie*, by M. Voillemier, *Dictionnaire encyclopédique des Sciences médicales*. 1869. Page 733.)

In short, the "evacuating apparatus" hitherto employed does not evacuate.

It is not a recent contrivance. From the earlier days of lithotripsy, the operation of breaking the stone has been followed by the obvious expedient of introducing a large and special catheter, through which water was injected and allowed to escape, bringing away a little sand, with a small fragment or two. This attempt at evacuation was aided by suction. With this object, and before the year 1846, Sir Philip Crampton employed an exhausted glass globe. For the same purpose a syringe has been used, or a rubber enema or hydrocele bottle, with which fluid could be also injected and the bladder washed. By entering the catheter well within the bottle or syringe, fragments were dropped inside the neck, where, lying below the current, they remained when the bottle was again compressed. When this neck was made of glass, by Clover, the fragments became visible, as in Crampton's globe, and to this neat arrangement the accomplished lithotritist, Sir Henry Thompson, refers as Clover's bottle. But neither the previous practice nor the efficiency of evacuation by suction through a tube had been materially advanced. In the mean time the syringe was modified in France by a rack and pinion attached to the piston, so that water could be injected and withdrawn with great force, a procedure not only useless but detrimental to the bladder if it be inflamed and thickened.

Before describing my own instruments it may be well to say a word in regard to the introduction of instruments, especially large ones, into the bladder, — an important subject in this connection.

A syringe facilitates an abundant use of oil in the urethra or within

a tube. Into the normal urethra a straight instrument can be introduced with at least as much accuracy as a curved one. Either may be passed rapidly as far as the triangular ligament, unless the instrument is very large, in which case great care is required not to rupture the mucous membrane. Having reached this point, which implies that there should have been no premature endeavor to turn the instrument, but that it should be passed as far as it will go in the general direction of the anus, the extremity of the instrument depresses the floor of the urethra in front of the ligament. Traction upon the penis next effaces this depression, and adds firmness to the urethral walls; so that if the instrument be withdrawn a little, and at the same time guided by the bony arch above, it can be coaxed without difficulty through the ligament in question,—a natural obstruction which physicians often mistake for a stricture. This obstruction passed, the rest of the canal is short, and corresponds to the axis of the body, to the line of which the instrument is now depressed. Even the enlarged prostate can often be traversed advantageously by a straight instrument. In fact, a prostatic catheter, as is well known, consists essentially of an inch or two of straighter tube added to the extremity of a common catheter, to reach through the unyielding prostate before the hand is depressed and the beak turned up. In passing either a sound, catheter, or lithotrite, the extremity of a straight instrument, and, curiously enough, the convexity of a curved one, is sometimes arrested just at the entrance of the bladder by the firm lower edge of the inner meatus. The fact that water now passes through the inner meatus, thus dilated, or that a stone is felt with the tip of the curved instrument, which has really entered the bladder, may lead the operator into the mistake of supposing that the instrument is fairly in it; and I have known its further entrance, after sliding over this obstacle, to be erroneously explained by assuming the existence of a second or hour-glass cavity in the bladder itself. To obviate this difficulty, and so soon as the triangular ligament is passed, the catheter, if curved, should be pressed through the indurated neck or prostate, in the direction of the axis of the body, by the hand on the perinæum,—a most efficient manœuvre when the prostate is large. If there be doubt the tip should of course be sought and guided in the rectum. After introduction a straight tube or the shaft of a curved one often returns to an angle of about 45° with the recumbent body, and, if the patient is not etherized, a feeling of tension may then be relieved by depressing, with the hand upon the pubes, the suspensory ligament of the penis,—an expedient also useful during the passage of the instrument.

My own practice has always been to etherize for lithotrity.

Each operator prefers the position to which he is accustomed, and when the urethra is healthy this is of very little importance. But if

there be stricture or prostatic obstruction a position at the patient's left side enables the operator to hold and direct the instrument to advantage with the right hand, leaving the left hand free to act in the perineum. After the instrument is introduced, and both hands are required above the pubes, they are most available if the surgeon changes his position and stands upon the patient's right.

It is important by a preliminary injection to ascertain carefully the capacity of the bladder by emptying it and then refilling it slowly with warm water, previously measured, until the water is expelled through the loosely held urethra by the side of the tube. In this way we prevent its over-distention. In the etherized subject a short pipe or nozzle suffices for this purpose. I have for many years employed a common Davidson's syringe. An unetherized patient may for a moment resist this injection through a short tube by contracting the sphincter of the bladder, but this readily yields. Except in a large bladder a distention by eight or ten ounces suffices for breaking the stone. The smaller the injection the more readily, indeed, do fragments fall into the blades of the instrument. But, unfortunately, so also does the mucous membrane. In fact, with too little fluid in the bladder the use of a lithotrite in unpracticed hands is attended with danger; and in a long sitting an injection which will render the walls moderately tense is the only really safe way of keeping the bladder from between the blades. After careful examination of the action of a lithotrite through an opening in the summit of the bladder, I have returned to this opinion which was held by the older writers on this subject. From time to time the diameter of the collapsing bladder should be estimated by carefully opening the blades of the lithotrite, and water should be introduced when necessary; but care should be taken not to injure a contracted bladder by first distending it, and afterwards adding to it the contents of the syringe or aspirating bottle.

A tape or an elastic band wound lightly once or twice around the penis retards the escape of injected water, and yet allows the movements of the tube or lithotrite.

In order to ascertain the maximum calibre of the urethra before introducing a tube, it should be measured by an instrument which will enter more readily than the tube. Such instruments we have in Van Buren's sounds, which are slightly curved at the end, and a little conical. Being made of solid metal, and nickel-plated, they traverse the urethra with singular facility. Otis's sounds also answer admirably for this purpose.

EVACUATING INSTRUMENT. (Figure 1.)—The following points are worthy of consideration in connection with any evacuating apparatus. The ten-ounce elastic bulb or bottle supplied with the usual instrument is inadequate to the exhaustion for which it is designed. It will barely sus-

tain, without collapse, a vertical column of water of the length of a catheter. A thick flask fatigues the hand of the operator. The bulb is also an awkward weight on the top of the catheter. These difficulties are obviated by interposing between the catheter and bulb a piece of rubber tube, varying in length as the surgeon may prefer, from six inches to two feet, to relieve the bladder from the force of any movement of the apparatus, and, what is more important, to allow the operator to hold the bulb on a level with the water in the bladder, or considerably below it. The exhaust then acts as a siphon, and readily draws off the water. The fragments gravitate to the bottom of the bulb, and are there collected in a glass chamber. (See Figure 1, 3, 4.) To prevent the possible return to the bladder of some single fragment while on its way to this receptacle, the rubber tube, if long, may be provided with a small

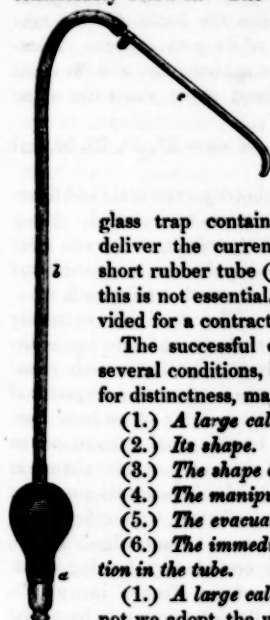
glass trap containing a wire-gauze or perforated tube, to deliver the current and strain it on its return, but with a short rubber tube (Figures 3, 4), which is more convenient; this is not essential. One or two smaller bulbs might be provided for a contracted bladder.

The successful evacuation of the bladder depends upon several conditions, both in the apparatus and its use, which, for distinctness, may be enumerated separately.

- (1.) *A large calibre of the evacuating tube.*
- (2.) *Its shape.*
- (3.) *The shape of its receiving extremity.*
- (4.) *The manipulation of the bulb.*
- (5.) *The evacuation of the fragments.*
- (6.) *The immediate recognition and removal of any obstruction in the tube.*

(1.) *A large calibre of the evacuating tube.* Whether or not we adopt the view of Otis, that the average capacity of the normal urethra is at about 33 of Charrière, there can be no question that it will admit a much larger tube than that commonly attached to either Clover's or

the French apparatus. The efficiency of the process of evacuation depends much upon using the largest tube the urethra will admit. This fact has been stated by Sir Henry Thompson. But he recommends for the glass cylinder or trap which is to admit this tube a "perforation at the end, the size of a No. 14 catheter," = 25 Charrière.¹ This perforation



(FIG. 1.) Evacuating Apparatus.
a. Elastic bulb and glass receptacle with brass cap, for débris. b. Rubber tube two feet in length. c. Evacuating tube of silver.

¹ Diseases of the Prostate, 4th edition, 1873, page 337.

is too small; and the tube which is designed to enter it is further reduced by its collar to the diameter of only 12, = 21 Charrière. In fact, this is the calibre of the evacuating catheters now attached to Clover's instrument, and is of itself fatal to their efficiency. An effective tube has a calibre of 28 to 31 or even 32 Charrière, and the meatus, which is the narrowest part, may, if necessary, be slit to admit it, if the urethra is otherwise capacious. Again, in the instrument, as sometimes constructed by Weiss, a joint is made by inserting an upper tube into a lower one, thus obstructing the calibre by a shoulder. The joints should become larger as the tube approaches the bottle, and the tube then delivers without difficulty fragments of its own calibre. Whatever be the size of the evacuating tube, the rubber tube, with its metal attachments, should have a calibre of at least seven sixteenths of an inch, = 31 Charrière.

My evacuating tubes are of thin silver, of sizes 27, 28, 29, 30, and 31, *filière Charrière*, respectively.

(2.) *Shape of the tube.* Works upon lithotrity enumerate and figure a variety of tubes through which fragments are to be aspirated. Many of these are useless. The best tube is either straight, or curved quite near the extremity; the latter to be used with the curve inverted and directed downward, the orifice then looking forward. (Figure 2.)

(3.) *Shape of the receiving extremity.* The receiving extremity should depress the bladder when required to do so, and thus invite the fragments, while its orifice remains unobstructed by the mucous membrane. Upon the floor of the bladder when not indented, a fragment of stone, lying at the distance of half or even quarter of an inch from the tube extremity, may not be attracted by the usual exhaust of the expanding bottle, which requires that the fragment should lie almost in contact with the tube. A very slight obstacle also impedes its entrance; and this fact renders inefficient all tubes like catheters, with orifices along the side or upper wall. Chips will not surmount their edge. Again, the orifice of a tube cut square is at once occluded by drawing in the vesical wall, while the spoon-shaped beak of the French instrument, made like the female blade of a lithotrite, allows fragments to lie too far from the opening in the tube. The best orifice is at the side of the extremity, and is made by bending the tube at a sharp right angle, carefully rounding the elbow, and then cutting off the bent branch close to the straight tube. (Figure 2 a.) The tube is then practically straight, while the orifice, which is slightly oval, delivers its stream laterally. The edge should be thickened and rounded to slide smoothly through the urethra, any rim inside the orifice should be masked by a false floor, but the calibre should be nowhere contracted. If the side walls of this orifice be removed a little, it gives an unguiform extremity to the tube, which is advantageous; and in introducing such a straight tube this tip

may be insinuated through the triangular ligament by rotation. If a couple of inches of the end of such a tube be bent, it may be inverted after introduction, and will bury itself in the floor of the bladder, which it depresses, while the orifice looks forward and is unobstructed. (Figure 2 b.) This form is very efficient, although I prefer the straight tube as safer and more easily directed when in the bladder, less liable to lodge fragments, and more readily cleared by a rod. An effective instrument may also be made of a tube cut square at the end, if a disk convex outwardly, to repel the bladder, be attached to it, at the distance of a diameter, by a bit of stiff metal. This was the original of the straight tube already described. When

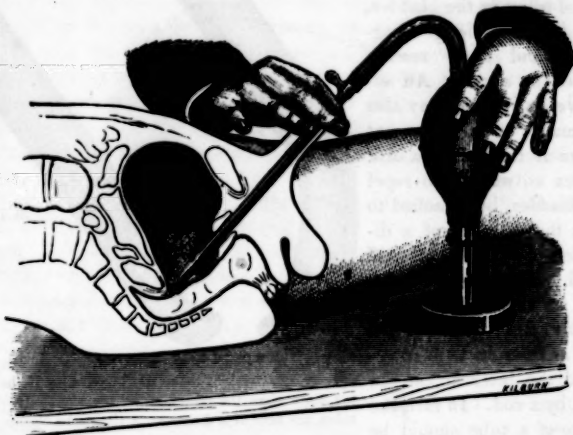


(FIG. 2.) Evacuating tubes, with unguiform extremity. a. Straight tube. b. Carved tube. The dotted lines show the false floor of the extremity. The tubes are here of a diameter 31 Charrière.

such an instrument is introduced the interval can be filled by a rod. In fact, the orifice of a tube should be contrived with a view to its introduction. The French tube already spoken of, shaped like the female blade of a lithotrite, would be efficient, if it were made large enough, — as it is not, — and provided also it were kept standing upon its heel in the bladder, with the shoe bent to make a precipitously inclined plane for the fragments. It would then offer a prolongation of the unguiform tip; but thus sharply bent, it would be less easy to introduce. Whatever be added to the extremity of the tube, in order to facilitate its introduction or to repel the bladder, should not prevent the orifice from lying, if required, in the floor of the bladder at the apex of a steep inverted tunnel.

(4.) *The manipulation of the bulb.* When the capacities of the bladder and urethra have been ascertained, the evacuating tube is introduced and the bladder completely emptied. A few ounces of water are next injected, that the fragments may be still floated after aspiration, and the apparatus, previously filled with water, is attached to the silver tube. To fill the bulb and at the same time expel the air, it should be held upright and several times compressed while the curved elastic is immersed in water. The latter is then carefully kept uppermost until attached to the evacuating tube. Air in the bladder is a disadvantage in distending it without floating the fragments. The

large bulb, together with its tubes, contains about ten ounces. If compressed with one hand until the sides meet, only about five ounces are displaced. If half compressed, and then gently worked with a shorter movement, about two ounces are moved back and forth, so that, provided the tube itself be handled carefully and skillfully, the bladder is not greatly disturbed. At the beginning of the process the latter movement

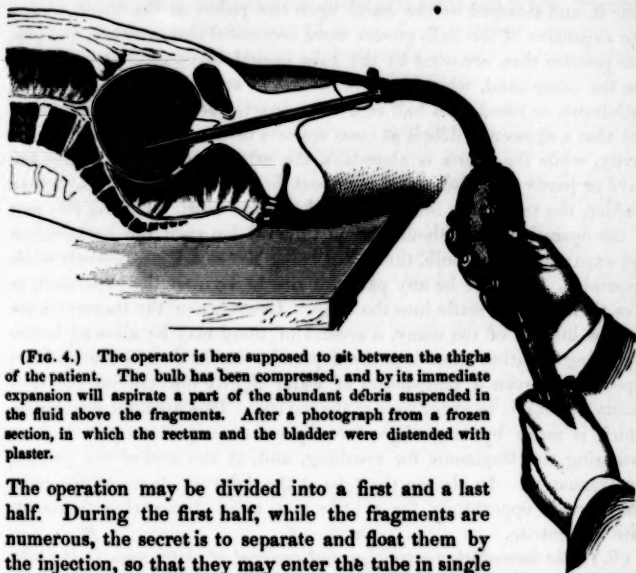


(FIG. 3.) The trap is here placed in a stand upon the table. The remaining fragments are few; and the capacious bladder is depressed to assemble them. The operator stands on the patient's left, and supports his right hand upon the thigh or pubes. This position is a convenient one during the whole evacuation.

is sometimes effective. The object of more water is to prolong suction when fragments are passing freely, but also occasionally to stir up the débris, and especially to relieve obstruction in the tube when it occurs. A convenient position for the surgeon is at the right hand of the patient, resting his left wrist on the pubes to steady the tube, while the bulb is supported in a stand on the table between the thighs. (Fig. 3.) Or, the surgeon sitting between the supported feet of the patient, (Fig. 4) compresses the bulb with the right hand, using the left alternately to hold the glass trap and to adjust the silver tube. But in this position the hand is apt, after a time, to bear heavily on the evacuating tube, so that it is better then to use the bulb as a handle to direct the silver tube, the interposed elastic saving the bladder needless fatigue.

(5.) *Evacuation of the fragments.* Evacuation of the fragments is quite an amusing art, requiring as much skill to accomplish the result in the shortest time as crushing them. Dexterity in the process will hardly

be acquired without practice outside the bladder.¹ If the bulb be compressed and immediately allowed to expand, while the tube is held above the débris, the fragments should fall in a shower into the trap.



(FIG. 4.) The operator is here supposed to sit between the thighs of the patient. The bulb has been compressed, and by its immediate expansion will aspirate a part of the abundant débris suspended in the fluid above the fragments. After a photograph from a frozen section, in which the rectum and the bladder were distended with plaster.

The operation may be divided into a first and a last half. During the first half, while the fragments are numerous, the secret is to separate and float them by the injection, so that they may enter the tube in single file as they fall, without obstructing it. This is accomplished by keeping the orifice of the tube away from the floor, aspirating them quickly while on the wing, just above the comminuted mass. In the latter part of the process, and after the smaller débris has been removed, the tube may be made to indent the floor so as to gather instead of separating the fragments, and as a final measure the tube should be raised towards a perpendicular in order to carry the orifice nearer the prostate. Some of the chips are apt to collect behind the tube orifice. The tube thus raised lies behind these chips. An advantage of the inverted curved tube is that it keeps the prostatic region clear. But the straight tube

¹ The bladder may be imitated by the lower two thirds of an ox bladder (carbolized for cleanliness) suspended inside a vessel, which has a mouth of four or five inches diameter, to which it is tied. The vessel should be previously nearly filled with water. To show the different and more efficient action of circular currents in the closed bladder, let the ox-bladder be tied to the evacuating tube, and held before a bright light. With a tin tunnel secured to the summit of a human bladder (*in situ*) to aid in replacing the fragments, the process of evacuation can be rapidly repeated. Calculi may be imitated by coal of varying hardness, or by a bit of old grindstone; a lighter and tough material for crushing, and liable to impact, is the cheap compressed meerschauum.

may be occasionally turned forward with the same result. A very slight movement of the tube sometimes makes much difference in the rapidity of the evacuation, so that when it is on the floor of the bladder, or quite near it, and steadied by the hand upon the pubes or the thigh, if any one expansion of the bulb proves more successful than another, the precise position then occupied by the tube should be carefully maintained. On the other hand, when the tube is choked at each expansion, if it be withdrawn or tilted up a half or even a quarter of an inch, it may happen that a shower of *débris* at once appears in the trap. Higher in the cavity, while the *débris* is abundant, the orifice may be turned downward or partly sidewise, so as to project horizontal currents around the bladder, the fragments being aspirated as they whirl. During this part of the operation there should be no interval between the compression and expansion of the bulb, the object being to catch the fragments while suspended. If there be any pause, it should be after the expansion, to give them time to settle into the trap. Later, when the fragments are too few instead of too many, a second or more may be allowed before aspirating to gather them into the depression in the floor of the bladder; especially as even a teaspoonful of water lightly injected on the floor shoots the *débris* to every part of the cavity. This artificial depression, which is made by very slight force, plays an important part both in gathering the fragments for crushing, and, at the end of the process, for evacuation. In placing the tube at the different stages of the process, there is opportunity for a little tact, as in discovering fragments with a lithotrite.

(6.) *The immediate recognition and removal of obstruction in the tube.*

It has been said that when the trap is held upright, as in its stand, fragments should appear in rapid succession, so that if a short interval elapses without the fall of *débris* into it there is obstruction. This happens not only when the bulb will not expand, when its dimple disappears reluctantly and its compression is difficult, but also when the current passes so freely that an impediment would hardly be suspected.

Obstruction occurs in several ways.

(1.) In the elastic tube, which may be accidentally bent at an angle or compressed. This should be looked at first. A bit is sometimes lodged by the injected current at the end of the elastic, and can be displaced by pinching it.

(2.) Within the bladder the most common obstruction is at the orifice of the evacuating tube. A little practice will enable the operator to distinguish the encouraging rattle of *débris* passing this tube to appear at once in the trap (if upright), from the valvular click of fragments too large to enter it. This click is quite constant at the end of the process after the smaller chips have been sifted off. If the orifice be choked an effort should be made to expel the fragments in the ordi-

nary way: first raising the tube into clear water above the débris, and then compressing the bulb with a short and forcible jerk. A half dozen such efforts rarely fail, but the rod may be introduced if necessary.

(3.) It sometimes happens that nothing appears in the trap, although the current passes quite freely, and the click of abundant débris is still felt. A scale or angular chip is then wedged inside the evacuating tube, which admits water but excludes fragments. This is worth remembering. The rod removes it.

(4.) If a fragment rattles back and forth in the evacuating tube without reaching the trap, there is obstruction high up. (See 1.)

(5.) The only other source of obstruction, and not an uncommon one, is by the wall of the bladder, when drawn against the tube with a dull thud or a rapid succession of jerks, not unlike the bite of a fish. The tube orifice may be moved to another part of the bladder where aspiration is more free. Perhaps the orifice has been accidentally turned sideways. It then readily engages the floor. Or the walls of the bladder are a little slack, and more water may be advantageously introduced to distend them.¹

After a few dozen aspirations it may be found that all the fragments which can pass the tube have done so; and that many of them have, in some diameter, its full dimensions. By the usual method of crushing, the lithotrite would now again be introduced, and again be followed by the tube.

(To be concluded.)

RECENT PROGRESS IN SYPHILOLOGY.

BY EDWARD WIGGLESWORTH, M. D.

Nature of Syphilis.—The confusion due to non-comprehension of the varying results of inoculation has been partially explained by the establishment of the fact that the materials employed were neither pure nor identical, and now, by two hundred experiments, Tarnowski has shown² that still more confusion has arisen from the fact that the subjects of such inoculation were necessarily totally unsuitable for purposes of experiment, being, of course, already under the influence of the syphilitic poison. Thus, the general debility would diminish the power of resisting any additional depressing influence, and, consequently, exaggerated conditions would result as effects of inoculation. The quality also of the effects of inoculation would vary, and an induration might result, not due to the nature of the material employed, but to the fact that the syphilis already existing in the individual had exerted its nat-

¹ The process of evacuation has been improved by repeated experiment since this paper was first published, and as here described shortens materially the time before occupied in drawing off the débris.

² Viertelj. f. Dermat. u. Syph., N. F. iv., 1 u. 2, page 19, 1877.

ural tendency in this direction. Moreover, the results of any irritation of the skin of a person suffering from syphilis are most severe if inflicted at the time of special implication of this tissue in the morbid process, that is, during "secondary" eruptions or relapses specially affecting the skin, and they tend, furthermore, to assume the form of the lesion at that time present upon it. Finally, idiosyncrasies do not cease to exist when an individual comes under the influence of the syphilitic virus; and altered general conditions, such as alcoholismus or mercurialismus, must be borne in mind. Tarnowski adds his testimony to the fact that variation in appearances at the point of inoculation depend, as to persons already syphilized at least, upon the intensity of the irritative quality inherent in the material used, and not upon the presence in or absence from such material of the syphilitic contagium.

Transmission of Syphilis. — Zeissl¹ adds another to the long list of reported cases of syphilis communicated, though neither carried by nor received upon the genital organs. A joiner, twenty-eight years of age, entered the syphilis wards of the Vienna General Hospital October 9, 1876, with well-marked syphilis. The genitals were perfectly free from signs of specific lesions, present or past. The dorsal aspect of the left thumb over the metacarpo-phalangeal articulation showed a bean-sized, depressed, still partly infiltrated, hard, hyperæmic, irregular cicatrix where a drunken companion had bitten him on the 4th of the previous June. The wound had healed readily, but broken out again spontaneously four weeks after healing. The epitrochlear gland of this arm was still markedly enlarged at the time the patient was seen; that of the other arm was normal. It was proved that the inflicter of the bite had a syphilitic sore of the mouth. The general manifestations, as well as the initial sclerosis upon the thumb, yielded readily to treatment by inunction.

Proper Treatment of Syphilis by Mercury. — The method of Ludwig for the detection of mercury in the urine is capable of proving the presence of as little as the one millionth part, and Guntz has availed himself of this means in order to study the period of duration of this drug in the human system, and the liberating action upon it of sulphur internally and combined with baths. He finds² (1) that mercury may be detected in the urine after eight weeks or more have elapsed since the discontinuance of any mercurial treatment; (2) that in cases where the urine gives no evidence of the presence of mercury after the administration of the drug, this may be detected after two or three days of the sulphur treatment; (3) that after a few days of such treatment the urine no longer gives any signs of the existence in it of the metal; (4) that while the mercury is thus being eliminated from the system there

¹ Allg. Wien. med. Zeit., No. 2, January, 1878.

² Ibid., i. u. ii. Heft, 1877.

is frequently a fresh outbreak of the symptoms of syphilis. The therapeutic inferences from these facts are that mercury is the antagonist of syphilis; that it should be administered in small doses and temporarily discontinued upon the slightest manifestations of salivation; and that sulphur is of service where too much has been administered.

Excision of the Initial Sclerosis. — Auspitz during the last four years has cut out the initial sclerosis of syphilis, at varying periods of its duration, from thirty-three patients, and arrives,¹ from his observations of these cases, at the following conclusions: —

(1.) No general syphilis followed when soft chancres were excised; but from this nothing can be deduced.

(2.) Though indolent buboes were almost invariably present in the groins, they were absent elsewhere.

(3.) When no subsequent induration occurred at the spot where the original one had been excised, the patient, as a rule, escaped general infection. The assertion that such subsequent induration always occurs is false.

(4.) Phagedæna occurring after excision neither prevented nor foretold general syphilis.

(5.) Since well-established cases of initial sclerosis were not always attended by general infection, it is clear that such initial sclerosis is no pathological proof of constitutional disease already existing, but is simply to be regarded as the first *dépôt* of the infection, at the threshold of the physical system, whence the infection afterwards advances. The same reasoning applies to the indolent buboes of the groins, which have long been by Auspitz distinguished from the adenitis of general syphilis. Nearly all the cases of excision where no syphilis followed showed, at the time of the excision, swelling of the glands in the groins.

(6.) At times a subsequent induration appeared at the spot of excision; yet this must not be regarded as due to any general infection of the system, but as the local result of infectious material which had not been excised.

(7.) In cases where excision does not prevent general infection, it is still possible that it may have exerted some partially protective influence.

(8.) Excision of the sclerosis, as a protection against syphilis, is to be recommended when the sclerosis has existed but a short time, and when no other symptom of syphilis, except inguinal buboes, can be detected; provided that the sclerosis is where it can be removed easily and without danger. From the glans or sulcus coronarius nothing should be cut. Treat the spot of excision after operation as a simple wound.

Excision of Sclerosed Lymphatic Glands. — Dr. W. A. Hardaway, of St. Louis, in a most valuable paper² read before the American Derma-

¹ Viertelj. f. Dermat. u. Syph., iv. 3, page 297, 1877.

² New York Medical Journal, December, 1877, page 580.

tological Association at Niagara, considers that early extirpation of the sclerosed glands contiguous to the initial sclerosis, when they exist in places favorable to surgical interference, would in some instances serve to avert constitutional disease, and be as legitimate an operation as excision of the chancre itself. He bases this opinion upon the belief, rapidly gaining ground, that syphilitic virus is not absorbed by the blood, but is taken up by the lymphatic vessels, carried to the ganglia nearest the point of initial lesion, and, after there undergoing a period of localization for a variable length of time, is thence dispersed into the general circulation; and that, therefore, syphilis is never *ab initio*, but only secondarily a blood affection." He gives many cases tending to prove that the secretions of hard chancres and of secondary lesions will produce either hard sores followed by general infection, or soft sores not so followed, these varying conditions being dependent upon (1) the natural tendency to pus formation in persons free from syphilis; (2) the well-known aptitude to pus formation in persons having syphilis; (3) the almost certainty, when the purulent secretions of irritated syphilitic lesions are used, of causing soft sores, although in some cases, when such secretions are employed, certain of the sores thus produced may be soft and others on the same person hard, or first soft and later becoming indurated (mixed chancre).

He quotes Dr. Hyde, of Chicago, as alluding to Reynaud's experiments,¹ reported to the French Academy, proving that infectious material is introduced into the blood mass through the lymphatic system. Reynaud produced horse-pox by inoculation, and, when the vesicles were fully developed, laid bare a lymphatic vessel passing from the site of the lesion, opened it, established a lymphatic fistula, injected the lymph from this into the jugular vein of another horse, and after a due period of incubation had the satisfaction of seeing the second animal covered with an eruption of horse-pox vesicles.

Hereditary Transmission of Syphilis. — Kassowitz, in answer to the question, "Can the mother, acquiring syphilis during the period of pregnancy, transmit the disease to a fœtus healthy at the time of fecundation?" shows² that three conditions are indispensable to its consideration: (1.) The health of the father at the time of fecundation must be proved. (2.) The health of the mother at the time of conception must be established, consequently the time of her inoculation exactly determined. (3.) The syphilis of the child must be proved by unequivocal symptoms. If but a single one of these conditions is wanting, the case is not to be considered for an instant. Where all these have been regarded, Kassowitz finds no case on record of transmission during

¹ *Le Progrès médical*, June 23, 1877, and *L'Union médicale*, July 7, 1877.

² Translation of Dr. M. A. Wilson, in *New York Medical Journal*, July and August, 1877.

pregnancy from the mother to the child, and much evidence for the impossibility of such an occurrence. He concludes: (1.) That a child, both of whose parents were non-syphilitic at the time of procreation, does not become syphilitic, even if at any time during pregnancy the mother contracts the disease. The disease may disturb the normal course of pregnancy and interrupt it prematurely, but is never transmitted to the fœtus. (2.) That a mother bearing a child infected by its father with syphilis is not herself infected by such unborn child. The virus does not cross the septum between the maternal and fœtal vascular systems.

The paper¹ of Kassowitz is answered² by Caspari. He remarks that, in order to prove that a mother giving birth to a syphilitic child is herself free from this disease, positive not negative testimony is needed, or, in other words, such a mother must in at least one case have manifested the usual early symptoms of a recently acquired syphilis. Until this has occurred we must presume that such mothers cannot be infected, by inoculation or otherwise, for the simple reason that evident or latent syphilis already exists in them. Such inoculation he has made with negative result. A careful examination usually discloses signs of existing syphilis. A case reported³ by Ljunggrén shows that syphilis can remain latent, late, "tertiary" symptoms, so called, appearing afterwards. The non-infection of nursing mothers by their hereditarily syphilitic children bears testimony also to this. So the similar condition of latency in domestic animals, as shown by the often-cited case of Youatt, a virgin mare being covered by a quagga, and at later periods, when covered by stallions, dropping always a foal bearing quagga-marks.

As to the non-infection of a healthy fœtus by a mother who acquires syphilis at any time after conception, on account of the impermeability of the septum between the maternal and fœtal vascular systems, Caspari cites Friedreich's case of metastatic carcinoma in mother and fœtus; that of Gusserow, who gave iodide of potassium to a pregnant woman, and found it in the amniotic fluid and in the urine of the child; and that of Benecke, who did the same with salicylic acid, while Magendie, Gusserow, Fehling, and he himself have detected in the fœtus of the rabbit coloring matters injected into the mother.

In regard to the gradual elimination of the poison from the system of the mother, so that children of an infected mother are born each less affected than the previous one, Caspari would admit this, as the rule, while yet calling attention to Hutchinson's case of twins, one markedly syphilitic, the other never showing signs of infection.

Bone-Lesions in Hereditary Syphilis. — As diagnostic marks of inherited syphilis, Parrot calls attention⁴ to certain osseous conditions,

¹ Med. Jahrb. Stricker, Wien, 1875, iv.

² Viertelj. f. Derm. u. Syph., 1877, iv.

³ Arch. f. Derm. u. Syph., 1870, p. 325.

⁴ Gazette des Hôpitaux, September 25, 1877.

the presence of which would be characteristic although other clinical signs might be wanting: thus an osseous bulging or tumefaction upon the inner aspect of the tibia occupying its whole extent, or constituting a series of small protuberances separated by depressions; so, also, at the lower end of the humerus, a thickening of the epiphysis as compared with the diaphysis, a point already considered by Taylor¹ (R. W.), of New York. From the seventh to the twelfth month, in addition to absence of hair, tuberosities like orange-seeds may sometimes be felt upon the sinciput, especially around the anterior fontanelle. Fusiform tubercular nodosities like olives occur also, though rarely, near the head of the femur and other long bones, due to consolidating fractures. Any or all of these conditions may be found with no other manifestation of the existence of the disease.

Syphilitic Disease of the Eyelids. — Forty years ago the nature of syphilitic iritis had been recognized by but few writers, while even to-day syphilitic disease of the eyelids is very seldom recorded. Zeissl attributes² this to several causes: (1.) Ulcerative processes in this situation are not often, except in the case of scrofulous individuals, accompanied by lymphadenitis. (2.) Connective-tissue indurations, especially those of syphilitic origin, develop more rapidly in the eyelids than upon any part of the integument, thus confusing the diagnosis, and finally, (3) both macro- and microscopically the initial sclerosis of syphilis and its final product, the gumma, are here with difficulty distinguished. We must, therefore, be always guided by the coincident existence of other lesions; and just as we distinguish an iritis papulosa and an iritis gummosa, so we are also justified in a distinction between blepharitis papulosa and blepharitis gummosa, according to the presence of early or late disease products elsewhere upon the body. B. gummosa is followed, however, by loss of substance here as elsewhere, while b. papulosa leaves no trace, or merely a superficial one. Furthermore, b. gummosa is accompanied by other deep tissue changes, as, for example, tarsitis palpebrarum; for, although Waldeyer denies³ the existence of cartilage cells in the eyelid, this has been admitted by Hyrtl, Langer, Kölliker, and others. Syphilitic disease of the eyelids must also be distinguished from carcinomatous or lupous affections.

Syphilis of Supra-Renal Capsules, Pancreas, etc. — Syphilis of the supra-renal capsules has heretofore been observed only in consequence of hereditary syphilis.⁴ Chvostek, however, reports⁵ a case of acquired syphilis, where, together with disease of the skin, liver, kidneys, lungs, and even pancreas, amyloid degeneration and chronic, interstitial, con-

¹ Bone Syphilis in Children, New York, 1875.

² Allg. Wien. med. Zeitung, 35, 36, and 37, 1877.

³ Handb. d. gesamm. Augenheilk. red. von Graefe u. Samisch., 1 Bd., 1 Abth., page 236.

⁴ Merkel in Ziemssen's Handb. d. spez. Path. u. Ther., viii., Bd. 2, 21, page 313.

⁵ Wien. med. Woch., No. 33, 1877.

nective-tissue hypertrophy of the supra-renal capsules were discovered after death, though there had been during life no clinical manifestations of their existence. Syphilitic disease of the pancreas, also present in this case, belongs likewise to the rarities of medical literature.

Syphilis of the Nose. — Schuster and Snger recommend¹ the use of the scraping-spoon for the removal of syphilitic growths of the nasal cavity, to prevent falling in and to arrest the disease process. Even perforation of the palate by scraping is at times the lesser of two evils. Artificial illumination should be used. Pathologically the conditions existing vary. There may be: (1.) Simple syphilitic infiltration, the mucous membrane not hypertrophied, with or without alteration of the glands, capillaries, or epithelium. (2.) The same, with hypertrophy of the mucous membrane and constriction of the dilated capillaries by means of cell growth; or, without this, a fact favoring the views of Auspitz and Unna upon the anatomy of the initial sclerosis, namely, that the vessels remain, as the rule, unobliterated. (3.) More severe infiltration of mucous membrane, passing into syphiloma. (4.) Syphilomata of the mucous membrane, or condylomata. The subjacent bones and cartilages may show either necrosis with exfoliation, absorbent inflammation without loss of the mucous membrane, or plastic osteitis with the production of spindle cells and connective tissue passing into bony formations.

The practical points are that (1) whereas ulceration of the mucous membrane has been held by writers to be the sole cause of ulceration of the bone and cartilage of the nose, this need not be the case. That membrane may remain uninjured while the subjacent tissues undergo changes like those of the tibia or frontal bone. (2.) A healthy mucous membrane may be caused to ulcerate by mechanical interference, and then this ulceration may extend to the bones, or disease process in subjacent bones may now pass over on to the injured membrane.

Syphilis of the Heart. — As early as 1844 Hammernjk reported² a case of insufficiency of the tricuspid valve, due to multiple inflammatory new formations in the papillary muscles. Virchow regards as gummosus myocarditis a large number of such cases reported before the structure of the syphiloma was accurately recognized. As sequences of gummata E. Wagner has described (1) atrophy, (2) ulceration or formation of cavities; and Friedreich, certain well-marked white and callous bridges of connective tissue as late inflammatory products of subendocardial syphilomata. Greffner now reports³ such a case, in which for years insufficiency of the aorta had existed, to which was added later tricuspid insufficiency, causing the death of the patient, and ascertained by

¹ Viertelj. f. Dermat. u. Syph., iv. 1 and 2, page 243, 1877.

² Oesterr. med. Woch., 1844, No. 2.

³ Deutsch. Arch., xx. Bd., 5 u. 6 Heft, 1877, page 615.

Cohnheim, at a post-mortem examination, to be due to gummosis myocarditis with the sequences referred to above. The endocardium was protruded by the gumma into the heart's cavity, producing circumscribed endocarditis in the neighborhood of the ends of the papillary muscles, and resulting in an adhesion of the new formation with the anterior left extremity of the tricuspid valve, the gumma subsequently wasting under the pressure of new-formed sclerotic tissue.

Neuro-Syphilis. — As nervous diseases of syphilitic origin are more amenable to treatment than the corresponding idiopathic ones, a correct diagnosis may at times be sufficient to save a life otherwise lost. Althaus calls attention¹ to the fact that though the brain and cranial nerves are by preference affected, the spinal cord is by no means exempt. Syphilitic affections of the nervous system are late forms. Traumatic injuries or depressing emotions act frequently as exciting causes, while a powerfully predisposing cause is an unsystematic or insufficient treatment of the disease in its earlier stages. Cerebral syphilis may appear as (1) successive hyperæmic attacks, with symptoms like those of general paralysis accompanying outbreaks of the disease process locally upon the body, and without treatment the patient finally dies of marasmus. (2.) Syphiloma, accompanied by paroxysmal and intolerable nocturnal headache and by sleeplessness, especially in young persons in whom insomnia from other causes is rare. (3.) Disease of the arteries, followed by apoplexy or thrombosis with necrobiosis and syphilitic hemiplegia, after which recovery under the best treatment is generally imperfect.

Dr. Greenfield showed to the Pathological Society of London a case of this sort,² a small syphiloma of the anterior cerebral artery, consisting of a small cell growth around minute vessels which were obstructed by a thickening of their coats, due to a concentric growth developing apparently from the endothelial lining of the vessels. This process, progressing to total obstruction of vessels and their consequent obliteration is a characteristic feature of syphilitic new growths, and is, according to Dr. Payne, the probable cause of the apparent caseation.

EXTRACTS FROM THE RECORDS OF THE DORCHESTER MEDICAL CLUB.

C. ELLERY STEDMAN, M. D., SECRETARY.

Two Cases of Death from Impacted Gall-Stones. — DR. C. C. HOLMES reported the case of Mr. J. C., aged sixty-one, a healthy and athletic man whom he had attended seven years before for an attack of gall-stones, since which time he had enjoyed perfect health. On the morning of the 21st of June Mr. C. was

¹ Med. Times and Gaz., November 10, 1877.

² Lancet, November 24, 1877.

seized with intense pain of a remarkably persistent nature in the epigastrium, and constant uneasiness with exacerbations of great intensity, increased by motion, accompanied by constipation, vomiting, hard, tumid abdomen, small pulse (130 to 145), and collapse. The patient was relieved by an injection of morphine subcutaneously, but without further symptoms sank and died in about forty hours from the beginning of the attack.



Fig. 1.

Autopsy by Dr. Stedman. All the organs except the brain were examined and found healthy but the gall-bladder, which was filled with a dark, thin glairy fluid; at its fundus was found a sac, about the size of half a small thimble, apparently imbedded in the wall of the gall-bladder and in the substance of the liver, filled with calculi not much larger than the head of a pin. There were no traces of recent inflammation around this sac. The gall-ducts were not distended, but at the junction of the ductus communis with the duodenum was firmly jammed a cylindrical calculus (as in the diagram

Figures 1 and 2) which could neither be pushed in nor out. It appeared that the collapse and shock of the intense spasm induced by the attempted passage of this stone were the causes of death.



Fig. 2

Dr. B. CUSHING showed a specimen of a gall-bladder containing two gall-stones, another loose in the duct which it distended, and another in the mouth of the duct as it emptied into the duodenum, completely plugging the orifice. (Figure 3.)

The patient, a woman, aged fifty-six, was seen by Dr. Cushing a year ago, when she told him that she had had attacks of colic which had been relieved by homœopathic treatment, and that she was now losing strength and flesh. The last attack required full anodynes, and the paroxysms were as frequent as once a week or fortnight.

She was treated beneficially by rigid diet, mostly liquid, and in limited quantities, and fifteen minutes before each meal $\frac{3}{4}$ grain each of quinine and morphia. She had never had jaundice. A month before she had sent for Dr. Cushing, when he learned that on the previous afternoon she had had an attack of pain for which she took "Haarlem oil." She had a restless night, and summoned the doctor because she felt so "weak." He found her with scarcely any pulse, complaining of epigastric pain. She lived an hour.



Fig. 3.

The autopsy showed the gall-bladder, with the calculi as above described. There was no sign nor product of inflammation in or around the parts. The heart was fatty. At no time had she intense pain. There had been no jaundice.

DISEASES OF THE NASAL CAVITY AND PHARYNX.¹

THE author of this little monograph, as some of our readers are well aware from having read articles of his in the original, is an ardent advocate of the use of galvano-cautery in most of the catarrhal affections of the nasopharyngeal space; and though we may fall considerably short of the results claimed by him, yet it is to be regretted that the use of this very valuable agent will probably remain much too limited till its application can be made easier. Michel claims to cure all cases of chronic nasal catarrh by removing all loose mucous membrane with the galvano-caustic loop, and scoring thickened parts with the galvano-caustic point. He very properly protests against the barbarous practice of removing nasal polypi with forceps, and, like Voltolini, prefers the galvano-caustic loop for this purpose. For hypertrophy of the pharyngeal tonsil he uses the "pharyngeal polyp loop."

The book contains many valuable suggestions as to details of galvano-caustic operations in the regions referred to. The translation is very well done.

INSANITY AND MEDICAL EDUCATION.

THE State of Massachusetts has recently expended about two million and a half dollars in the erection of a couple of insane asylums which may, by crowding, contain a thousand patients. Not a cent of this extravagant outlay has gone towards providing for medical education even such facilities as were had in Paris at the close of the last century. With more than two thousand insane people in our asylums, and probably double that number in our population of a million and two thirds, there is no opportunity for the medical student of this State to get the most superficial, practical knowledge of insanity without going to New York or Europe. A few years hence Baltimore also will offer him the best facilities in this regard, for the trustees of the Johns Hopkins Hospital have already made arrangements to have that important branch taught clinically at the Shepherd Asylum, now building.

The evils of this deficiency in our medical education are twofold. In the first place there are, and there probably will be for some years to come, many persons suffering from the milder forms of mental disease, who will not go to an insane asylum, whether it is best for them to do so or not; and they must, in the vast majority of cases, take their chances of proper or improper treatment from men who have had no opportunity of learning what the best course for them is. This is thought by competent observers to be one of the prominent causes of the neglect of early cure and of the accumulation of chronic, incurable cases in the community. In this connection it is proper to call attention to the great numbers saved from death by pulmonary consumption through the general knowledge of its detection and treatment *early*; and to say that disease of the mind is not the awfully mysterious thing that many people suppose it

¹ *Diseases of the Nasal Cavity and the Vault of the Pharynx.* Translated from the German of DR. CARL MICHEL by MR. C. JUNG. Detroit. 1877. Pamphlet, pp. 109. (For sale by A. Williams & Co.)

to be. It should be treated on the basis of common sense and knowledge of practical medicine, both of which qualifications are not so difficult to acquire with proper facilities, such as every first-rate medical school should furnish.

In the second place, the asylums themselves are sufferers from the short-sightedness of their own policy in this matter. Almost none in this country make careful pathological researches, very few systematically perform autopsies, and two or three only have specially-appointed pathologists, while some of the best have not even a room adapted to making post-mortem examinations. The wards of the asylums are closed to the clinical teacher and to the student; two or three physicians go daily through the routine of case-taking, prescribing, and writing records for sixty or a couple of hundred of patients each, exhausting their mental and physical energies in attempting a multiplicity of duties which they cannot by any possibility fully perform, and what is the result? (1.) The patients cannot get proper care; (2) the asylums, instead of becoming progressive, must follow the old marked-out lines; (3) nothing is done to advance medical education, and not enough to raise the standard of scientific treatment; (4) when vacancies occur in the medical staff, accomplished men hesitate to assume positions of such drudgery, and (5) properly trained men are wanting to take the offices when they are offered. Many of us have ransacked our brains with wearying frequency to find some willing and suitable person to go to one asylum after another.

The remedy is so simple and has been so long in common use in other countries that it is strange we have not adopted it here, instead of devoting so much time to "hospital architecture," as it is called. Let us hope that external architectural effect and multiplication of mechanical appliances have reached their climax in the hospital that has a machine for making mop-handles and no provisions for advancing medical science or teaching students. There would be no difficulty in having clinical instruction in an asylum if sufficient interest were awakened; pathologists could easily be appointed, and autopsy-rooms might readily be prepared. A half dozen house officers, too, or even a smaller number, holding the office for six months, would relieve the superintendent and his staff of much routine work, beside adding a constantly fresh element to the direction of the hospital and furnishing a corps of trained men from whom assistant physicians could be selected whenever wanted. The patients would benefit by the increased attention to little matters, and the superintendent might devote more of his time to general study and fresh air, to the manifest advantage of his charge. Many of us will live to see the time when there will be in all of our leading asylums for the insane two medical men competent to be chief, so that the superintendent and his first assistant can relieve each other of continuous work, to such a degree that one will be away getting strength and fresh ideas a considerable portion of the time. The present system, at least, cannot long stand against the current which is pushing forward so rapidly to advance all branches of medical knowledge.

THE CANADA MEDICAL ASSOCIATION.

WE have received the first volume of the Transactions of the Canada Medical Association, containing an account of its tenth annual meeting held at Montreal on September 12th and 13th. The address by the president, Dr. William H. Hingston, discusses with ability a variety of subjects of interest to the profession in Canada. In speaking of medical education he points out strongly the advantages of a liberal education for those who intend to study medicine. He makes no allusion to the system of teaching medicine in Canada or comparisons with the new system in course of adoption in the United States. In alluding to the proposed union with the American Medical Association, favored by Dr. Bowditch when president, but reported upon adversely by the judicial council, he explains that the Canada association did not ask for amalgamation, but merely for "a conference at some central point," so as to become "more intimately acquainted," and to discuss "medical and surgical questions on a common basis." He thinks that the union of the two associations is in the near future. There are reports on the Progress in Canadian Medicine, by Dr. George Ross, of Montreal; on Therapeutics and New Remedies, by Dr. Fulton, of Toronto, and on Canadian Medical Literature of the past year, by Dr. Howard, of Montreal. Among the numerous other papers we notice one on Crime and Insanity by Dr. Workman, on Vital Statistics by Dr. A. B. Larocque of Montreal, and an interesting illustrated paper on Excision of the Knee-Joint by Dr. George E. Fenwick. The president for the present year is Dr. Joseph Workman, of Toronto, and the secretary is, Dr. A. H. David, of Montreal. The next meeting will be held in the city of Hamilton on the second Wednesday of September, 1878.

MEDICAL NOTES.

—The present Report of the Board of State Charities should be read by the light of that of last year, and of the report of the commission appointed by the governor and council to inquire into the expediency of revising the system of administration of the public charities of the commonwealth, a report published December, 1877.

We shall have cause to be entirely satisfied with the administration of the public charities only when no further improvement is possible. The State has doubtless no reason for being dissatisfied with the administration of the present system (if the word can be used in this connection), but the system itself has been outgrown, as is recognized by the Board of State Charities itself. We are disposed to think that the abolition of the present board, and the adoption of such a system as that recommended by the commission above referred to in its excellent and extremely painstaking report, would greatly diminish friction and increase at once economy and efficiency in the working of our public charities.

—In the number of the JOURNAL for January 24th attention was called to the condition of the tympanum as a sign of respiration in the new-born child,

and it was credited as new to Dr. Gellé in the *Lyon Médical*, 1877. Investigation shows that the anatomical changes in the foetal tympanic tissue, previously noticed by Von Troeltsch, were fully described by Wreden, of St. Petersburg, in the *Monatsschrift für Ohrenheilkunde*, August, 1868; and later he calls attention to the medico-legal value of these changes in an article entitled the Ear-Test as a Substitute for the Lung-Test in Cases of Judicial Investigation when the Head of a New-Born Child is found separated from the Body, in the *Vierteljahrsschrift für gerichtliche Medicin*, vol. xxi. In the *Medico-Chirurgical Review*, vol. xii., Ogston denies that this test is of legal value, and its value has also been questioned by other investigators.

— An amiable but not very logical little book has just been published in New York on the State Regulation of Vice, in which prostitution is looked upon entirely as a question of morality, where one sex sacrifices the other in pursuit of the gratification of its lust. The question, however, is largely one of ethics, and its social and sanitary bearings are so broad and so deeply interwoven with the whole system of human life, from the days of Solomon and Pompeii down to the present day, that they cannot be adequately treated in arguing whether "God has so created men and women as to render prostitution an inherent human need;" nor are the problems connected with syphilis and impure sexual intercourse likely to be fairly treated in that frame of mind usually found in "a Christian woman whom God appears to have commissioned specially to lead in a righteous crusade against state-regulated vice and all social impurity." Many of us who have had dispensary districts consider the vast majority of prostitutes as often voluntary sacrifices to their own lust, or their own determination to live luxuriously without hard work, as doomed to lives of infamy by the lust of men. What to do with them, and how to make them work the least possible injury to the community, is a problem which, in its magnitude, has fairly staggered the wisest men, and on which the book before us sheds only a feeble ray of light, although showing that there is a very wide-spread opposition (as brought out by the Geneva Congress) to legalizing prostitution in any form.

— Many of our readers have seen the elegant little machine known as Dr. Pond's sphygmograph. He has continued to make improvements in it from time to time, and it has now reached a high degree of perfection. The great difficulty experienced in the application of the sphygmograph is, in this instrument, obviated by means of a delicate spring balance, which shows the exact amount of pressure applied to the pulse. A pendulous mirror has been adopted for the use of light. The most delicate vibrations of the pulse can be thrown on a screen and enlarged to any extent desired. It will be found convenient for teachers of physiology, and of practical use to the physician. By this means the pulse can also be photographed.

— The St. Mary's Infant Asylum of Dorchester has been for the last six months under the charge of Dr. E. D. Peters. The annual report, which lies before us, shows considerable improvement in the sanitary condition of the institution. The mortality of children under six months of age is, however, large, there having been sixty-six deaths among the one hundred and five who were admitted during the year. Of sixty-five, however, who were over six months of

age, but four died. The report states that "many of the young infants are brought to the house in such a wretched condition that they die within a day or two after entrance, and in some cases before their wrappings are removed. In many other instances the infants exhibit no particular signs of disease. They take and digest large quantities of milk, there is no vomiting, the bowels are normal, but the child wastes away and dies. It is to such cases that the term 'marasmus' is applied, for want of some better designation.

"The cases of ophthalmia, though numerous, were not severe. In only three instances was there any ulceration of the cornea, and of these all escaped with perfect vision as far as can be ascertained."

— So many opinions have been expressed as to the value of beef tea and the proper way to prepare it that we venture to copy the following extract from a valuable lecture on Typhoid Fever, by Professor Pepper, in a late number of the *Philadelphia Medical Times*: "Indeed, as has been very thoroughly proven by Dr. Horace Hare in experiments made at the university laboratory, beef boiled in the good old-fashioned way in a bottle with water gives us a resulting solution which contains only about one fourth of one per cent. of nourishing material. The beef tea thus manufactured is chiefly a solution of the salts of meat, and is therefore not nutritive, and only valuable as a stimulant to digestion. But there is another way of making beef tea, which gives better results. Take a quantity of tender meat, and, after cutting off the fat, chop it up fine, put it in a bowl, pour a pint of water over it, and let it stand over night. It may possibly be well to keep the water just on a simmer; do not raise the temperature above 140°, however, or you will coagulate all the albumen, and so either leave it on the sieve in straining, or introduce it into the stomach in the form of curds. After this simmering solution has been allowed to stand over night, pour it into a pipkin and heat it again gently, with enough salt to give it flavor, and, if necessary, add a drop or two of muriatic acid. Then pour it out over a hair sieve into a jar. The resulting solution will contain all the nutriment possible, and is the most valuable kind of stimulant and laxative."

— Senator (*Virchow's Archiv*, B. lxx.) thoroughly plastered and varnished the legs and trunks of two healthy men. The impermeable dressing was worn for one week, with no fall of temperature, no exhaustion, albuminuria, dyspnea, convulsions, or paralysis, which evil consequences are invariably seen in animals. Senator concludes that the historic gilded boy was probably poisoned by some ingredient in the material applied to his skin.

— *La France médicale* announces the admission of midwives to the obstetric clinics of 1877-78. Until 1874 they were required to pass an examination in orthography alone. This year they were examined in spelling, arithmetic, the metric system, and the geography of France. Out of eighty-five applicants forty-eight were admitted. Of these fourteen passed a perfect examination.

— *Le Journal officiel* states that in the course of the present year a hospital conducted by female physicians will be opened in Berlin, if the administration give permission. Already a clinic directed by physicians of the female sex exists in the capital of Prussia.

— According to the terms of Sir Astley Cooper's will, funds were provided for a prize to be called the Astley Cooper Prize for the best original essay or treatise. Says the *Deutsche medicinische Wochenschrift* for December, "As is well known, the prize for this year should have been awarded to Professor Eulenburg, of Greifswald, and Dr. P. Guttman, of Berlin, for their united essay. But the medical world in old England could not endure this distinction of two Germans. It was therefore protested that the competing paper should have but one author. Unfortunately the solicitor-general adopted the same view, so that the first decision was reversed, and the prize was adjudged to the second-best paper. Its author was G. A. Wood.

— The *Lancet* cautions the public against the use of books which have been allowed to lie about in sick chambers, and thinks there is reason to suspect that communicable diseases are not infrequently spread by means of books lent for general reading. And since it knows of no way of disinfecting such books, the *Lancet* calls upon custodians of libraries to take measures which will provide against this danger.

BOSTON CITY HOSPITAL.

SURGICAL CASES OF DR. GEORGE W. GAY.

Amputation by Lister's Method of Part of Foot for Railroad Injury; Recovery. — P. H., aged twenty-four years, had his left foot badly crushed by falling under a car, while in an intoxicated condition. All the metatarsal bones except the first were broken, and the soft parts on the top of the foot were torn up and bruised as far as the instep. Three toes were crushed off completely. It was the unanimous opinion of three of the surgical staff who saw and examined the patient that a portion of the foot should be amputated.

The patient was etherized, and the tarsus was sawn through the scaphoid and cuboid bones, the flap being made up of a long piece of skin on the inside of the foot and as much of the plantar tissues as was not too much injured at the time of the accident.

A great number of small vessels were tied with the catgut ligature; the wound was closed with silk sutures; the operation was done under the carbolic spray, and the stump was dressed after Lister's method, as often as any discharge appeared at the edge of the gauze, for forty-five days. At first the dressings required changing every day or twice a day, but afterwards they were allowed to remain a week. A portion of the flap sloughed, but not enough to impair it to any extent. There was little if any fetor to the discharge. The wound was entirely healed in two months.

Stone in the Bladder; Lithotomy; Recovery. — T. M., aged nineteen years, was born and has always lived within ten miles of Boston. For three years past he has been drinking water from a well into which lime was occasionally thrown for purposes of purification. Frequent and painful micturition began a year and a half previous to his entering the hospital in September last. At that time he was obliged to pass his water every half hour or hour, and at times even oftener. Examination of urine: neutral; specific gravity 1020;

urea normal; albumen in large quantity; copious sediment containing pus, blood, pavement epithelium, and crystals of triple phosphates. At times what seemed to be a small stone could be detected with the sound, but very often nothing could be found in the bladder.

November 30th. Patient etherized, and the lateral operation for lithotomy performed. A phosphatic calculus, one inch and seven eighths in length and weighing five hundred and forty grains, was removed. Hæmorrhage free; wound plugged with the canule à chemise.

The urine began to flow from the meatus in a fortnight, and soon after all of it came the natural way when he kept his thighs together. At the end of two months he held his water three hours during the day, and six or seven hours during the night. Wound closed.

Abscess about the Scapula mistaken for Rheumatism. — J. B., a large colored man, said he had been treated for rheumatism previous to coming to the hospital. His pain had always been confined to the right shoulder and vicinity. On examination a tense, fluctuating tumor was found to extend from the lower edge of the scalp down below the inferior angle of the scapula, and forwards nearly to the head of that bone. Two moderate openings were made into the swelling, and sixty ounces of pus by measurement were evacuated. The patient was discharged, well, in twenty-eight days.

LETTER FROM PHILADELPHIA.

MR. EDITOR, — Strong and concerted effort is now making by the medical profession throughout this commonwealth, directed toward the object of obtaining the necessary legislation from the proper authorities at Harrisburg for the establishment of a State Board of Health. At the last meeting of the State Medical Society, in June, 1877, a resolution was adopted earnestly commending such a course to the legislative bodies, and asking the coöperation of the various county societies and the personal influence of their members in endeavoring to secure for this bill the enlightened and favorable consideration it eminently deserves. The profession in Pennsylvania are keenly alive to the importance of the subject, and are using every legitimate means of accomplishing their object and securing for our State the advantages already enjoyed by sixteen other States in the Union. Nor have they just awakened to its importance, for this step has been urged for several years, and indeed a bill of this character was brought before the legislature last winter, and fell short of becoming a law by one vote only. The prospect now seems more favorable to its passage, and we hope very soon to hear of the adoption of the resolution, under the title of A Bill to create a State Board of Health, to provide for the Registration of Vital Statistics, and to assign Certain Duties to Local Boards of Health and Health Officers in this Commonwealth.

The States which have thus far shown their appreciation of the necessity for governmental direction and the value of organized and systematic action in all matters pertaining to the public health are Alabama, California, Colorado, Georgia, Illinois, Louisiana, Maryland, Massachusetts, Michigan, Minnesota,

Mississippi, New Jersey, North Carolina, Tennessee, Virginia, and Wisconsin. This gratifying result is largely owing to the influence of the American Medical Association, and the labors of the committees appointed, at its meeting in Philadelphia in 1876, for the specific purpose of urging upon the proper authorities the importance of the establishment of a board of health in every State in the Union. We are glad to learn that in Connecticut and several other States the local committees are actively at work, and are likely to succeed in the near future.

Dr. Brown-Séquard is now in Philadelphia, and has consented to deliver two lectures before the Philadelphia County Medical Society, on Paralysis and Convulsions as Effects of Disease of the Base of the Brain. We anticipate an intellectual feast in listening to these discourses, which by the time this is received will probably be *un fait accompli*, as the dates appointed by the committee are the evenings of the 15th and 16th inst.; the place selected is the auditorium of the Jefferson Medical College Hospital.

The schools are now at an uneventful stage of their course, bending all their energies to preparing for the examinations next month. The new plan, we are informed, is working most satisfactorily at the university, and those to whose energetic efforts the change is chiefly due claim for it an unqualified success. A guarantee fund of fifteen thousand dollars per year for four years has been subscribed to carry the school through the transition period, and, as all of this will probably not be required for current expenses, many of the subscribers have consented that the balance shall be carried to the permanent fund for endowment purposes. It is also whispered that some friends of the medical department have liberally remembered it in their wills, and it is confidently hoped that before long the school will be upon an independent footing. The widow of Dr. Rhea Barton, preferring to enjoy the pleasure of giving while living to see the good fruits of generosity, has paid to the board of trustees the sum of fifty thousand dollars to endow the chair of surgery, now ably filled by Prof. J. Hayes Agnew.

The number of students at the university is said to be about the same as last winter, although the exact number has not been announced. At the Jefferson it is exactly the same as last year, by a strange coincidence, five hundred and ninety-eight matriculants having registered thus far this session. The graduating class in the spring, however, will probably be smaller than it was a year ago, as an increasing proportion of the students are beginning to recognize the advantages offered by the third term, for which, it will be remembered, no additional expense is incurred. Every encouragement is offered by the faculty to induce those students who can afford to devote the additional time to remain for a third year. In truth, the lecturers on the practical branches have been obliged of late, by the constant accumulation of fresh facts in the progress of medical science, to divide their courses, to a greater or less extent, and take up certain important subdivisions of their subjects on alternate years, thus practically extending their course into another session. This plan has been pursued for several years by the lecturers on the practice of medicine, both at the Jefferson College and the University of Pennsylvania, and it is now being adopted by other members of the faculty.

The expedient of strapping the affected side in acute pleuritis recommended by Dr. Gleason, in your issue for January 24th, is well thought of in Philadelphia, where it has been under trial for several years, and may now be considered as fairly past the probationary period and as occupying the position of a standard resource in the condition referred to. Why it has not gained a favorable notice in the text-books is unaccountable, since it is, as Dr. Gleason avers, a valuable means of treatment, affording marked relief to the patient, and evidently conducing to early convalescence. This practice originated here with Prof. John B. Biddle, dean of the Jefferson College, who first made use of it nearly twelve years ago in a case of empyema in a boy at Girard College, giving permanent relief. He has been resorting to it in all stages of the disease for nearly six years, and has frequently spoken of it in terms of commendation to the class during that period, and it should now be widely known and more frequently practiced. Mention of this method will be found in the last three editions of Dr. Biddle's *Materia Medica*. In severe cases it is recommended to carry the adhesive straps completely around the thorax, so as to control the movements of the chest walls and to compel the patient to carry on respiration solely by the diaphragm and abdominal muscles. This is not meant to exclude other treatment, however, but merely to serve as an adjunct to it.

Dr. Laurence Turnbull, who, it will be remembered, acted as one of the committee of arrangements of the Philadelphia County Medical Society at the International Medical Congress, and after being elected chairman of the section of otology graciously resigned in favor of Dr. C. J. Blake of your city, has just compiled a practical manual of anæsthetics for the use of both the medical and dental professions. It embraces all the anæsthetic agents in general use, and from an examination of the advance sheets it appears to contain in small compass much valuable information, gathered from various sources. The title is alliteratively announced as *The Advantages and Accidents attending Artificial Anæsthesia*, being a *Manual of Anæsthetic Agents and their Modes of Administration*, with twenty-two illustrations. Among the points considered in regard to these agents are their relative risk, tests of purity, precautions to be observed in their use, and the treatment of asphyxia, concluding with a brief account of the history of artificial anæsthesia. It is announced as nearly ready, by Lindsay and Blakiston.

As aural surgeon to the Jefferson Medical College Hospital, Dr. Turnbull has recently performed his sixth operation of perforation of the mastoid process down to the large cells for the relief of chronic mastoid disease, his first operation being in 1862. The patient in question had been subject for a long period to severe and obstinate attacks of pain in the left ear associated with scarlatinal suppuration of tympanic cavity, and for some time before entering the hospital had been suffering so severely as to require two hypodermic injections of half a grain of morphia daily to give him any relief. No pus was discharged at the time of operation, but the patient was almost immediately relieved by the flow of a red serous fluid. The wound healed without bad symptoms except a slight attack of erysipelas, and the patient returned to his home in Mahanoy City at the end of a month perfectly free from pain. His physician has since written that the relief has been permanent, and that his

mind is now clear, although it was clouded before and his friends feared that he was going insane.¹

Whether owing to the open winter and exceptionally warm weather or not, we have been suffering for the last two months from a mild epidemic of both scarlet fever and diphtheria which is now happily declining. The deaths from the former have been about sixteen per week, and of diphtheria (including croup) about thirty, until last week, when they dropped to fourteen and fourteen respectively. For the current week they were of scarlet fever twelve, of diphtheria and croup seventeen. W.

HYDROPHOBIA.

MR. EDITOR.—In your number for February 7, 1878 (page 181), is an interesting article on Rabies and Hydrophobia. Permit me to call attention to a paper published by me in the *Cincinnati Medical Observer* (vol. i., No. 1, January, 1856, page 22), in which I detail the treatment of eight cases of bites from animals supposed to be rabid, where tincture of iodine was employed, and where no access of disease followed in any one case. I have now treated twenty-five cases in the same way, and not one case of hydrophobia has occurred. I apply the tincture of iodine at once, or at any time after the bite is inflicted for an indefinite period, even after cicatrization is complete, till suppuration is produced and the wound heals by granulation.

In the paper referred to I record eight cases; seven of them occurred in 1853.

CASE I. (April, 1853.) Several wounds on right hand. Applied tincture of iodine every five minutes for one hour, covering the wounds in the intervals with poultices of elm bark. After the first hour applied the iodine every hour for ten hours, and every four hours for the succeeding twenty-four hours, and ordered a change of poultices every twelve hours till the wounds healed. I saw the patient daily for a week, and occasionally for six months after. No symptoms of hydrophobia had appeared.

CASE II. (April 29th). The bite was not from a *rabid* dog, so far as could be ascertained, but the same treatment was instituted.

CASE III. (June 24th) was also of doubtful character, but the iodine treatment was applied.

CASE IV. (July 4th) was an undoubted case of rabies, and was treated as was Case I. The patient was well two and a half years after.

CASE V. (September 16th) and Cases VI. and VII. (December 10th) were bitten by the same dog.

CASE VIII. (June 26, 1854), bitten by a cat.

I have had cases come to me from neighboring States many days after the infliction of the wounds and when cicatrization was complete, and have advised the use of the iodine and poultices till the cicatrices should suppurate. In no case have I heard of the occurrence of hydrophobia.

W. H. MUSSEY, M. D.

CINCINNATI, February 9, 1878.

¹ Case reported in full in *Medical and Surgical Reporter* for February 2, 1878.

COMPARATIVE MORTALITY-RATES.

	Estimated Population, July 1, 1878.	Deaths during week ending Feb. 16, 1878.	Annual Death-Rates per 1000 living.		
			For the Week.	For the Year 1877.	Mean of ten Years, '68-77.
New York.	1,093,171	533	25.35	24.32	28.71
Philadelphia.	876,118	329	19.53	18.80	21.54
Brooklyn.	549,438	187	17.69	21.51	25.50
Chicago.	460,000	122	13.79	17.83	22.39
Boston.	375,476	122	16.89	20.10	24.34
Providence.	104,500	43	22.36	18.81	19.20
Lowell.	55,798	21	19.62	19.09	22.50
Worcester.	54,937	20	18.94	21.07	22.30
Cambridge.	53,547	13	12.62	18.69	20.83
Fall River.	53,207	18	17.59	21.35	24.96
Lynn.	35,528	9	13.18	20.42	19.67
Springfield.	33,981	10	15.31	16.04	19.77
Salem.	27,140	8	15.33	20.38	21.15

THE AMERICAN INSTITUTE OF INSTRUCTION will hold its forty-ninth annual meeting among the White Mountains, in New Hampshire. The sessions will be held on Tuesday, Wednesday, Thursday, and Friday, July 9, 10, 11, and 12, 1878. The members will be entertained at the extensive hotels in that section at very low rates of board. Among the houses which will be open to the institute are the Crawford, Fabyan's, Twin Mountain, and Mt. Washington. An extended line of excursions will be planned, and a portion of each day will be devoted to explorations in the Switzerland of America. Railroads will give free return-tickets to members. All persons attending the institute are entitled to its privileges by the payment of one dollar as a membership fee.

BOSTON, February 15, 1878.

THOMAS W. BICKNELL,
President American Institute of Instruction.

OBITUARY.—Professor Albert Smith, M. D., LL. D., of Peterborough, N. H., is dead. He was born in 1801, and graduated from Dartmouth College in 1825. He attended lectures at the New York College of Physicians and Surgeons, and also at the Bowdoin and Dartmouth medical colleges, taking his degree at the latter institution in 1833. From that time until 1838 he was established in his profession at Leominster, Mass., from which place he returned to his native town. He was early successful as a practitioner, and before middle age also acquired a high reputation as a medical scholar and thinker. In 1849 he was appointed professor of materia medica and therapeutics in the Dartmouth Medical College, where he continued to lecture until his resignation in 1870, and from that time until his death he was professor emeritus of the same branch. In 1857 he delivered his course of lectures before the Vermont Medical College, and also the course at the Bowdoin Medical School in 1859.

BOOKS AND PAMPHLETS RECEIVED.—Surgical Treatment of Intra-Uterine Submucous Fibroids. A Case by E. T. Easley, A. M., M. D. Little Rock, Arkansas. (Richmond and Louisville Medical Journal.)

Diseases of the Eye. Ptosis, Mydriasis, Strabismus, Hemipopia. By William Dickinson, M. D. (St. Louis Medical and Surgical Journal.)

American Clinical Lectures. Edited by E. C. Seguin, M. D. Vol. iii. No. 6. The *Ætiology and Pathology of Chronic Joint-Disease*. By Newton M. Shaffer, M. D. New York: G. P. Putnam's Sons. 1877.